UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

UNILOC USA, INC., et al.,

Plaintiffs,

v.

APPLE, INC.,

Defendant.

Case No. 19-cv-01692-EJD (VKD)

REPORT AND RECOMMENDATION RE CONSTRUCTION OF CLAIMS OF U.S. PATENT NO. 7,587,207

Plaintiffs Uniloc USA, Inc., Uniloc Luxembourg, S.A. and Uniloc 2017 LLC (collectively, "Uniloc") sue defendant Apple, Inc. ("Apple"), alleging infringement of claims 1-3 and 5-11 of U.S. Patent No. 7,587,207 ("the '207 patent"), titled "Data Delivery Through Beacons." Upon consent of the parties, the presiding judge referred the matter to this Court for a report and recommendation regarding the construction of disputed claim terms. 28 U.S.C. § 636(b); Fed. R. Civ. P. 72(b)(1); Dkt. No. 79. The parties fully briefed the matter, and the Court held a tutorial and claim construction hearing on August 17, 2020. Dkt. Nos. 121, 125, 137, 140, 147.[1] At the Court's request (Dkt. No. 148), Uniloc subsequently submitted to this Court a complete copy of the prosecution history for the '207 patent. Additionally, the Court has received a supplemental November 12, 2020 submission by Apple. Dkt. No. 195. Upon consideration of the arguments and evidence presented by the parties at the hearing and in their briefing, the Court now issues the

[1] In their briefing, the parties reference a dispute over the timeliness of Apple's production of the declaration of its retained expert, Dr. Michael Foley. Dkt. No. 108 at 2 n.2; Dkt. 135 at 7 n.2. At the claim construction hearing, however, Uniloc confirmed that it has no procedural objections to Dr. Foley's declaration. Dkt. No. 147. Uniloc did not assert any other basis for objection to Dr. Foley's declaration.

following report and recommendation regarding the construction of claim terms.

I. BACKGROUND

The '207 patent issued on September 8, 2009 and relates to a communications system that includes at least one beacon device that transmits wireless messages to at least one portable device, such as a cellular phone or personal digital assistant, for the purpose of facilitating communication of location-specific information to the portable device. '207 patent at 1:3-17, 2:15-30. As described in the specification, "Context Aware" ("CA") portable devices are those that may receive location information, such as local maps or information about nearby shops or restaurants. *Id*. at 1:12-19. The beacon broadcasts a series of inquiry messages, each in the form of predetermined data fields arranged according to a communications protocol, such as Bluetooth. *Id*. at 2:18-21, 38. For the delivery of data that includes location information, prior to transmission the beacon adds to each inquiry message an additional data field carrying broadcast data. The CA portable device receives the transmitted inquiry messages and reads data from the additional data field, including location data. *Id*. at 2:21-26. According to Uniloc, the claimed invention provides a way for a CA terminal to extract basic location information from a beacon device without requiring the CA terminal to join a network, thus allowing data to be delivered more quickly and efficiently. *See* Dkt. No. 121 at 2; *see also* '207 patent at 2:10-13, 43-47.

As discussed below, the parties agree on the construction of one term of the '207 patent, but otherwise dispute the meaning of six others. Of the six disputed terms, the parties agree that two are means-plus-function limitations subject to 35 U.S.C. § 112(f) (formerly § 112(6)), but dispute the corresponding structure for the claimed function, or whether the '207 patent even discloses any corresponding structure at all.

II. LEGAL STANDARD

Claim construction is a question of law. *Teva Pharmaceuticals, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 325-327 (2015); *Markman v. Westview Instruments, Inc*., 517 U.S. 370, 387 (1996). "It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp*., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotations and citation omitted). "Proper claim construction requires an

examination of the claim language, the written description, and, if relevant, the prosecution history." *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998). "The appropriate starting point, however, is always with the language of the asserted claim itself." *Id.*

Claim terms "are generally given their ordinary and customary meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips*, 415 F.3d at 1313 (internal quotations and citations omitted). Claims must be read in view of the patent specification, which "is always highly relevant to the claim construction analysis" and "the single best guide to the meaning of a disputed term." *Id.* at 1315 (internal quotations and citation omitted). The aim of claim construction is to "capture the scope of the actual invention that is disclosed, described, and patented." *Fenner Invs., Ltd. v. Cellco P'ship*, 778 F.3d 1320 (Fed. Cir. 2015) (citation omitted); *accord Phillips*, 415 F.3d at 1316. The written description, prosecution history and the claims themselves form the intrinsic record that provides substantial guidance as to the meaning of particular claim terms. *Id.* at 1313, 1315-17.

Courts may also rely on "extrinsic evidence, which 'consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.'" *Id.* at 1317 (quoting *Markman*, 52 F.3d at 980). Such evidence may be considered "if the court deems it helpful in determining 'the true meaning of language used in the patent claims.'" *Id.* at 1318 (quoting *Markman*, 52 F.3d at 980). However, extrinsic evidence "is less significant than the intrinsic record in determining the legally operative meaning of claim language," and cannot "be used to change the meaning of claims in derogation of the indisputable public records consisting of the claims, the specification and the prosecution history[.]" *Id.* at 1317, 1319 (internal quotations and citation omitted). "In sum, extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1319.

III. REPORT AND RECOMMENDATIONS

A. Level of Ordinary Skill in the Art

Apple's expert, Dr. Foley, proposes a standard for a person of ordinary skill in the art with

respect to the '207 patent:

> a Master of Science Degree (or a similar technical Master's Degree, or higher degree) in an academic area emphasizing electrical engineering or computer engineering with a concentration in wireless communication systems or, alternatively, a Bachelor of Science Degree (or higher degree) in an academic area emphasizing electrical or computer engineering and having two or more years of experience in wireless communication systems.

Dkt. No. 135-5 ¶¶ 17-18. Uniloc did not address this proposed standard in its briefing. At the claim construction hearing, Uniloc confirmed that it does not dispute Dr. Foley's assertions regarding the level of ordinary skill in the art.

B. Agreed Construction

Although the term initially was disputed, the parties have since agreed to the construction of "wireless messaging system" (claim 6). Dkt. No. 121 at 7; Dkt. No. 135 at 13. This Court approves the parties' agreed-upon construction and recommends that "wireless messaging system" in claim 6 be construed to mean "the 'communications system' of claim 1."

C. Disputed Terms

The parties dispute six terms in the '207 patent, which are addressed separately below.

1. "an additional data field" (claims 1, 9)

Uniloc's Proposed Construction	Apple's Proposed Construction	Court's Recommended Construction
a data field different from the predetermined data fields in that it is not predetermined	a data field that is not in the first communications protocol	a data field that is not part of "the plurality of predetermined data fields arranged according to a first communications protocol" that forms the inquiry message

The parties dispute the meaning of the term "an additional data field" appearing in independent claims 1 and 9. As relevant to the arguments presented here, claim 1 recites that a beacon:

- broadcasts "a series of inquiry messages each in the form of a plurality of

predetermined data fields arranged according to a first communications protocol";

- "add[s] to each inquiry message prior to transmission an additional data field"; and
- "include[s] an indication in one of said predetermined data fields, said indication denoting the presence of said additional data field."

'207 patent at 11:55-12:7. Claim 9 contains essentially the same recitations. *See id*. at 12:39-47.

Uniloc's proposed constructions have shifted over time, including during the course of the parties' claim construction briefing. While Uniloc initially proposed in its Patent Local Rule 4-3(b) disclosures that "an additional data field" should be given its ordinary meaning, Uniloc later proposed in its opening brief that the term should be construed to mean "a data field different from the predetermined data fields." Dkt. No. 108 at 2; Dkt. No. 121 at 3. In its reply brief, Uniloc argued that the term means "a data field different from the predetermined data fields, in that it is not predetermined," which is the position it now advocates. Dkt. No. 137 at 1. Apple argues that the claims and the specification do not merely distinguish the "additional data field" from those that are "predetermined," but rather distinguish it from "the predetermined data fields arranged according to a first communications protocol." Dkt. No. 135 at 4. Apple maintains that the term "additional data field" should be construed to mean "a data field that is not in the first communications protocol." Dkt. No. 135 at 2.

Based on the arguments presented, at a minimum the parties appear to agree that the "additional data field" is not among those in the "plurality of predetermined data fields" recited in the claims. The crux of their dispute concerns the additional limitation in Apple's proposed construction that an "additional data field" is also "not in the first communications protocol."

Uniloc's proposed construction simply distinguishing the "additional data field" from those that are "predetermined" is not informative, insofar as different claim terms are presumed to have different meanings. *See generally Amgen Inc. v. Sandoz, Inc.*, 923 F.3d 1023, 1032 (Fed. Cir. 2019). Moreover, Uniloc's formulation suggests that the claims merely require that the "additional data field" not be "predetermined," which is not an accurate reflection of the claim language and the specification.

As noted above, claims 1 and 9 recite "a series of inquiry messages each in the form of a

plurality of predetermined data fields arranged according to a first communications protocol" and an "additional data field" that is "add[ed] to each inquiry message." '207 patent at 11:55-12:3, 12:39-44. This claim language makes clear that "a plurality of predetermined data fields arranged according to a first communications protocol" describes and refers to the inquiry message, and that the "additional data field" is added to the inquiry message. *Id*. Additionally, the claims recite that the beacon "include[es] an indication in one of said predetermined data fields . . . denoting the presence of said additional data field." *Id*. at 12:5-7, 12:45-47. Thus the plain language of the claims does not merely differentiate between the "additional data field" and "predetermined data fields," but more specifically distinguishes the "additional data field" from "predetermined data fields arranged according to a first communications protocol."

Further support is found in the specification, which identifies Bluetooth as one embodiment of a communications protocol and provides that the "additional data field" may be "added to the end of the inquiry message." *Id*. at 2:37-47, 7:46-55. Here, the specification explains that "this new" or "extra data field" is placed in the "generally unused" "guard space conventionally allowed at the end of a Bluetooth inquiry packet[.]" *Id*. at 7:56-8:3. The specification thus indicates that the "additional data field" is not among, but rather is added to, the "predetermined data fields arranged according to a first communications protocol."

This Court therefore declines to recommend adoption of Uniloc's proposed construction suggesting that the "additional data field" merely is one that is not "predetermined."

At the same time, however, the Court is not persuaded by Apple that "additional data field" should be construed to mean "a data field that is not in the first communications protocol." As an initial matter, it is not clear what it means to be "in" a communications protocol. In its briefing, Apple described the issue as whether the "additional data field" is "referenced in" the first communications protocol (Dkt. No. 135 at 2), and at the hearing, Apple stated that being "in" a protocol means to be referred to or used in that protocol (Dkt. No. 147). Apple argues that its formulation is supported by the specification, which states that "by placing the additional field at the end of those sent according to the communications protocol (preferably but not essentially Bluetooth), those protocol-compatible devices not intended for reception of beacon signals can

simply ignore the additional data without compromising operation according to protocol." '207 patent at 2:31-36. In other words, Apple contends that this language suggests that the "additional data field" is one that is not defined or recognized by the protocol. But for the reasons discussed above, while this Court agrees that the "additional data field" is not among the predetermined data fields arranged according to a first communications protocol that comprise the inquiry message, the Court finds no support for the conclusion that the claims necessarily require the "additional data field" to be incompatible with, or disallowed by, the first communications protocol.

Accordingly, this Court recommends that the term "an additional data field" be construed to mean "a data field that is not part of 'the plurality of predetermined data fields arranged according to a first communications protocol' that forms the inquiry message."

2. "beacon device" (claims 1, 9)

Uniloc's Proposed Construction	Apple's Proposed Construction	Court's Recommended Construction
a device that broadcasts short-range messages	a fixed location device that broadcasts short-range inquiry messages	a device that broadcasts short-range inquiry messages and that is fixed relative to [a][the at least one] portable [communications] device

Claims 1 and 9 recite a communications system comprising at least one "beacon device" and "at least one portable device" (as recited in claim 1) or "a portable communications device" (as recited in claim 9), wherein the beacon broadcasts inquiry messages to the portable device or portable communications device.[2] '207 patent at 11:53-56, 12:37-39. The parties agree that a "beacon device" is one that broadcasts short-range messages. *See id.* at 3:18, 4:24-26, 5:58-59. The key dispute is whether the beacon device may be either portable or fixed at a location (as Uniloc argues), or whether the beacon device must be fixed at a location (as Apple contends). For the reasons discussed below, the Court finds that while the beacon device need not be "fixed," in

[2] For simplicity, the Court uses "portable device" and "portable communications device" interchangeably in the following discussion.

the sense of being immovable or stationed in an absolute location, the beacon device is one that is fixed relative to the location of the portable device.

As noted above, claims 1 and 9 recite two types of devices: a beacon device and a portable device. Apple correctly notes that of the two, the beacon device is not expressly described by the claims as "portable." But that fact alone does not compel the conclusion that the "beacon device" cannot be portable, and the claims themselves do not contain language limiting the "beacon device" to a device that is not portable. Apple's expert, Dr. Foley, opines that based on the claim language and the specification, a person of ordinary skill in the art at the time of the invention would understand a "beacon device" to have a "fixed" location. *See* Dkt. No. 135-5, ¶¶ 19-30. However, Dr. Foley did not address other portions of the specification, discussed below, that this Court finds relevant to the issue whether a "beacon device" must be fixed at a location.

Although the parties' briefing tends to discuss their respective positions regarding "fixed location" in absolute terms, the specification describes the location information transmitted by the beacon device in both absolute and relative terms and does not suggest that the claimed "beacon device" necessarily is one that is immovable. As Apple points out, there are a number of places where the specification uses the term "beacon" interchangeably with "base station." *See, e.g.*, '207 patent, 1:16-17, 4:25-26, 5:19, 6:41, 7:47, 8:9, 8:54. In view of the arguments presented in the briefs and at the claim construction hearing, the parties do not appear to dispute that base stations generally are large and immovable objects, such as those used with cell towers. *See* Dkt. No. 135-7, 147. However, Uniloc correctly notes that the specification does not uniformly refer to or use "beacon" in that way. Indeed, in discussing certain beacon devices in the prior art, such as those in the museum in Hewlett-Packard's "Cooltown" project, the specification describes beacons as "small infrared transceivers located close to pictures or sculptures" that link to information about those items. '207 patent, 1:57-59.

Apple argues that base stations and beacons placed in museums nevertheless are examples of beacons that generally are not expected to move from place to place, and thus are "fixed." However, the specification states that the claimed beacon device may be used in both "fixed and mobile communications systems," *id*. at 11:37-43, and it also states that the "[l]ocation

information" transmitted by the beacon "may be absolute or relative," *id.* at 11:32. In particular, with respect to relative location information, the specification cites several examples, including one in which a beacon is affixed to a bus: "Location information may be absolute or relative. In the latter case location information may be expressed, for example, with reference to building room designations, vehicle identity (say, when a person is on a bus), or in other ways as will be apparent to the person skilled in the art." *Id*. at 11:32-36. Thus, the specification suggests that although the bus with the beacon moves from place to place, the beacon is the fixed reference point with respect to a rider carrying a portable device who may get on or off the bus at various places. In other words, what is important in this example, is not the rider's absolute location (e.g., Global Positioning System ("GPS") coordinates), but rather the rider's location in relation to the bus and the beacon. This example, in which the beacon's location is fixed relative to the portable device, is consistent with other portions of the specification that describe the importance of the portable device being in range of the beacon. *See id*. at 6:43-48 ("Analysis of these procedures indicates that the time taken to join a piconet and then be in a position to receive information from the master could be several tens of seconds, which is much too long for CA applications, where a user may move out of range of a beacon before joining could be completed."); 10:5-8 (stating that the process of joining a piconet "is not ideal for providing location information to a context aware device—a mobile CA device may not spend enough time near a given beacon to establish a Bluetooth link.").

All of this suggests that ultimately what is key, in view of the stated object of the claimed invention to provide information[3] quickly and efficiently, is the location of the portable device

[3] In addition to stating that "[l]ocation information may be absolute or relative," the specification also appears to distinguish between "actual location" and "location specific" information. *See* '207 patent, 9:47-50 ("Mobile CA devices may be provided with location aware applications. Such applications generally require actual location information, as opposed to just location specific information."). In their briefing, neither side addressed the import, if any, of "actual" versus "location specific" information or how those terms might relate to the claimed invention. In response to the Court's query, at the hearing Uniloc suggested that "actual location" may refer to information about precise location (e.g., GPS coordinates), whereas "location specific" may refer to information from which a user of a portable device could determine his or her location based on the user's location relative to a beacon. In any event, neither side appears to find the distinction between "actual location" and "location specific" significant for purposes of resolving their dispute over the construction of the term "beacon device."

relative to the beacon. Thus, the user of a portable device obtains location information (whether absolute or relative), via short-range messages from a beacon, and that information may be useful or relevant given the location of the portable device.

Accordingly, this Court is persuaded that the claimed beacon is fixed at a location, but only relative to the portable device of the communications system recited in claims 1 and 9. Additionally, Apple persuasively argues that because the only messages at issue are inquiry messages, it is appropriate to include "inquiry" in the construction of "beacon device." This Court therefore recommends that "beacon device" be construed to mean "a device that broadcasts short-range inquiry messages and that is fixed relative to [a][the at least one] portable [communications] device."

3. "inquiry message(s)" (claims 1, 9)

Uniloc's Proposed Construction	Apple's Proposed Construction	Court's Recommended Construction
message that makes or seeks an inquiry	[a message/messages] seeking a response to identify devices available for communication	[a message/messages] seeking a response to identify devices available for communication

Claims 1 and 9 recite a beacon device that broadcasts a series of "inquiry messages." Based on the briefing and the oral arguments presented, it seems that at a minimum the parties agree that an "inquiry message" is one that seeks a response. The principle dispute is whether the term properly is construed to mean that the response is "to identify devices available for communication," as Apple proposes.

In its Patent Local Rule 4-3(b) disclosures, Uniloc initially proposed that "inquiry message" be construed to mean "messages designed to identify stations for communication"; but Uniloc now argues that "inquiry message" should be construed as a "message that makes or seeks an inquiry." Dkt. No. 108 at 1; Dkt. No. 121 at 5. In its opening brief, Uniloc stated that its formulation "reflect[s] the actual language of the claim, and the construction given this term by the Board of Patent Appeals and Interferences [BPAI] during the prosecution [of the '207 patent]." Dkt. No. 121 at 5. Specifically, Uniloc noted that the examiner rejected claims over U.S. Patent

No. 5,835,861 ("the '861 patent") which describes a billboard that broadcasts a vendor's telephone number. On appeal, the BPAI broadly construed "inquiry message" to mean "a message seeking information or knowledge," and concluded that the vendor's telephone number in the '861 patent "is an inquiry message because the message is implicitly seeking information (e.g., a response) from any potential message recipients to call the phone number provided." Dkt. No. 135-8 at 6. Without any further explanation in its opening brief as to why its proposed construction is correct, Uniloc urges that Apple's proposed construction is "unjustifiably narrow" and "conflicts with that of [the BPAI], which construction was used to determine whether the claims were obvious." Dkt. No. 121 at 6.

The Court does not recommend adoption of Uniloc's proposed construction for several reasons. First, it is not clear how Uniloc's formulation—"message that makes or seeks an inquiry"— reflects the actual claim language or the BPAI's broad definition of "inquiry message." Second, Uniloc's proposed construction does not make sense. It is somewhat circular in that it uses the word "inquiry" which appears to be the key disputed portion of the very term being defined. Additionally, when probed by the Court at the claim construction hearing, Uniloc was unable to satisfactorily explain what it means for a message to "*seek* an inquiry." Although Uniloc made several additional arguments in its reply brief (Dkt. No. 137), this Court declines to consider them as they are simply attorney argument, unsupported by any expert declaration, testimony, or any other extrinsic evidence.

As for Apple's proposed construction, Apple contends that "inquiry message" properly is construed to mean "[a message/messages] seeking a response *to identify devices available for communication*," with the italicized portion of Apple's proposal being the primary point of contention. In particular, the parties dispute whether Apple's proposed construction suggests that a complete networked connection is required for communication, and is thus inconsistent with the stated purpose of the claimed invention to allow a CA-device to obtain location information from a beacon device without requiring the CA-device to join a network.

To the extent that Apple suggests an "inquiry message" must be understood to specifically mean a Bluetooth inquiry message, this Court rejects that proposition. Dependent claims 3 and 11

are limited to Bluetooth, and the Court cannot read such a limitation into independent claims 1 or 9. *See Phillips*, 415 F.3d at 1315 (stating that "the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim."). Moreover, a construction that defines "inquiry message" to mean a Bluetooth inquiry message is also inconsistent with the specification. While the specification refers to Bluetooth as the preferred embodiment, it also expressly states that the claimed invention is not limited to Bluetooth. *See* '207 patent, 4:18-22 ("As will be recognised, the general invention concept of including a broadcast channel as part of the inquiry procedure is not restricted to Bluetooth devices, and is applicable to other communications arrangements, in particular frequency hopping systems."). Additionally, the specification explains that a Bluetooth handshake is not required for the invention to operate, noting that "CA handsets can receive the broadcast data quickly without being required to run through a lengthy procedure to join a piconet." *See id*. at 6:49-8:6.

Nonetheless, the fact that an "inquiry message" is a message sent to identify devices available for communication—whether communication is established through Bluetooth or some other protocol—is supported by the specification's description of the inquiry process. '207 patent, 6:62-63 ("When a Bluetooth unit wants to discover other Bluetooth devices, it enters a so-called inquiry substate."); 6:40-42 ("Inquiry allows a would-be slave to find a base station and issue a request to join the piconet."); 7:18-22 ("Overall the inquiry transmissions cycle between transmissions of train A and train B. As shown by FIG. 4, the specification states that this switch between trains must occur at least three times to ensure the collection of all responses in an error-free environment."); 7:41-44 ("On hearing an inquiry containing an appropriate IAC [inquiry access code], the portable device enters a so-called inquiry response substate and issues a number of inquiry response messages to the beacon.").

Uniloc maintains that such a construction is inconsistent with the stated purpose of the claimed invention. Here, Uniloc argues that once the additional data field is added to the inquiry message, the need to establish a two-way communications link with another device will have been eliminated, and the message will not be recognized as an "inquiry message," i.e., the message is

no longer suitable for identifying devices for communication. In particular, Uniloc directs the Court to '207 patent 10:59-64, which states, "For fast location acquisition, it is assumed that the beacon must be active continuously. Such activity would normally prevent conventional two-way links being set up but this obstacle can be overcome by employing two beacons operating in tandem, thereby providing fast access to the piconet and an unlimited two-way throughput capacity simultaneously." However, that passage as interpreted by Uniloc, appears to be inconsistent with other portions of the specification indicating that non-CA devices may ignore the additional data field and simply look at the inquiry message. *See id*. at 2:31-36 ("Furthermore, by placing the additional field at the end of those sent according to the communications protocol (preferably but not essentially Bluetooth), those protocol-compatible devices not intended for reception of beacon signals can simply ignore the additional data without compromising operation according to protocol."). None of the other portions of the specification cited by Uniloc compel a contrary conclusion. *See id*. 2:26-30; 6:18-28, 37-48; 8:6-9; 10:5-16.

Accordingly, while this Court expressly finds that "inquiry message" is not limited to Bluetooth, the Court otherwise recommends adoption of Apple's proposed construction and that "inquiry message" be construed to mean "[a message/messages] seeking a response to identify devices available for communication."

4. "Bluetooth messaging" (claims 3, 11); "Bluetooth protocols" (claim 8)

Uniloc's Proposed Construction	Apple's Proposed Construction	Court's Recommended Construction
Ordinary meaning	Bluetooth specification versions 1.0A, 1.0B, and 1.1	Bluetooth [messaging/protocols] as defined in the Bluetooth specification versions 1.1 or earlier (including versions 1.0A and 1.0B), and that remain in later versions of the Bluetooth specification

The primary dispute is whether, as Apple contends, the terms "Bluetooth messaging" and "Bluetooth protocols" appearing in dependent claims 3, 8 and 11 necessarily refer to Bluetooth as

it existed at the time of the claimed invention and do not cover later versions of Bluetooth released after the priority date of the '207 patent. There is no apparent dispute that the only known Bluetooth protocols at the time the '207 patent application was filed are those described in the Bluetooth Core Specification versions 1.0A, 1.0B and 1.1. *See* Dkt. No. 135-5 ¶ 32. Noting that claim terms generally are given their ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of the invention, *see Phillips*, 415 F.3d at 1312-13, Apple argues that the disputed claim terms are limited to those three particular versions of the Bluetooth protocol. Uniloc argues that the patent is not so restricted, and encompasses Bluetooth versions after version 1.1. While Uniloc maintains that the disputed terms have an "ordinary meaning," Uniloc does not clearly identify what that "ordinary meaning" is. Nevertheless, as an alternative, Uniloc proposes that the Bluetooth Core Specification's definition of "Bluetooth"—which Uniloc emphasizes has remained the same from the time of the claimed invention to the present—provides a reasonable definition that may be used for the claim terms at issue.[4] *See* Dkt. No. 121 at 6; Dkt. No. 137 at 7-8.

Rather than focus on Bluetooth version numbers, the Court finds that the better approach is to look to the functionality described or defined in the Bluetooth Core Specification versions in question—namely, whether aspects of the Bluetooth technology that are material to the claimed invention have changed in any meaningful way over time. If there has been a meaningful change, then the construction of the disputed claim terms should reflect that only the functionality material to the patent, as it existed at the time of the claimed invention, is encompassed by the claims. The parties' briefing did not focus on this particular issue, and the Court does not find Dr. Foley's declaration or Uniloc's citation to *SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870 (Fed. Cir. 2004) helpful on this point.

Based on the discussion held at the claim construction hearing, the parties seem to agree

[4] According to Uniloc, the Bluetooth Core Specification defines "Bluetooth" as follows: "Bluetooth is a wireless communication link, operating in the unlicensed ISM band at 2.4 GHz using a frequency hopping transceiver. It allows real-time AV and data communications between Bluetooth Hosts. The link protocol is based on time slots." Dkt. No. 121 at 6 (citing Bluetooth Core Specification, Version 5.2, section 1.4, at 196; Version 1.1, Appendix III, Definitions, at 921).

that the Bluetooth specification has changed over time. For example, there appears to be no dispute that there are differences between later versions of the Bluetooth protocol known as the Bluetooth "low energy" standard and earlier versions that some refer to as the "Bluetooth classic" standard. Briefly stated, Apple posits that the Bluetooth low energy standard uses a different type of message, an "advertising message," that is materially different from the "inquiry message" used by the Bluetooth classic standard. Uniloc disagrees that any differences between the Bluetooth classic and Bluetooth low energy standards are material to the claimed invention.

As it is beyond the scope of claim construction, this Court does not express any opinion about whether either of these Bluetooth standards encompasses functionality that is meaningfully different from Bluetooth version 1.1, which is the latest version that the parties agree is covered by the '207 patent. For present purposes, the Court finds that the disputed claim terms do not include materially different functionality that is only described in the Bluetooth specification for Bluetooth versions that are later than version 1.1. Stated another way, the claim terms include protocols for functionality that is described in version 1.1 or earlier and that persists in later versions of the Bluetooth protocol. Accordingly, this Court recommends that the terms "Bluetooth messaging" and "Bluetooth protocols" be construed to mean "Bluetooth [messaging/protocols] as defined in the Bluetooth specification versions 1.1 or earlier (including versions 1.0A and 1.0B), and that remain in later versions of the Bluetooth specification."

5. Means-Plus-Function Terms (claim 7)

Independent claim 7 recites a mobile device with a receiver capable of receiving a short-range wireless inquiry message, with "means for determining when an additional data field including location information has been added to said plurality of data fields" and "means for reading the location information data from such an additional data field." '207 patent, 12:26-33. The parties agree that the above-quoted excerpts from claim 7 are means-plus-function terms subject to 35 U.S.C. § 112(f), but dispute the corresponding structure for the claimed function, or whether the '207 patent adequately discloses any corresponding structure.

The purpose of § 112(f) "is to allow claiming of an element of an apparatus or a step of a method in terms of the function performed by that element or step." *Typhoon Touch Techs., Inc.*

v. Dell, Inc., 659 F.3d 1376, 1383 (Fed. Cir. 2011). "The statute provides that a claim may state the function of the element or step, and the 'means' covers the 'structure, material, or acts' set forth in the specification and equivalents thereof." *Id.* (quoting 35 U.S.C. § 112(f)). "In turn, the specification must contain sufficient descriptive text by which a person of skill in the field of the invention would 'know and understand what structure corresponds to the means limitation.'" *Id.* at 1383-84 (quoting *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008)). Thus, "[i]t is well settled that 'if one employs means-plus function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language.'" *Blackboard Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382 (Fed. Cir. 2009) (quoting *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc)). "If the specification does not contain an adequate disclosure of the structure that corresponds to the claimed function, the patentee will have 'failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112,' which renders the claim invalid for indefiniteness." *Id.* (quoting *In re Donaldson Co.*, 16 F.3d at 1195)).

"Additionally, interpretation of what is disclosed in the specification must be made in light of the knowledge of one skilled in the art." *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007) (citation omitted). "Thus, in order for a means-plus-function claim to be valid under § 112, the corresponding structure of the limitation must be disclosed in the written description in such a manner that one skilled in the art will know and understand what structure corresponds to the means limitation." *Id.* (internal quotations and citation omitted). "Otherwise, one does not know what the claim means." *Id.* (internal quotations and citation omitted). "However, the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification." *Id.* (internal quotations and citation omitted).

"Construing a means-plus-function claim term is a two-step process. The court must first identify the claimed function." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1351 (Fed. Cir. 2015) (citation omitted). "Then, the court must determine what structure, if any, disclosed in the specification corresponds to the claimed function." *Id.*

"In cases involving a computer implemented invention in which the inventor has invoked

means-plus-function claiming, [the Federal Circuit] has consistently required that the structure disclosed in the specification be more than simply a general purpose computer or microprocessor." *Aristocrat Techs. Australia Pty Ltd., v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008). Thus, computer-implemented means-plus-function claims require an algorithm, or algorithms, in order to disclose sufficient structure. *Id.* at 1337-38. "The usage 'algorithm' in computer systems has broad meaning," with courts observing that the "preferred definition of 'algorithm' in the computer art is: 'A fixed step-by-step procedure for accomplishing a given result; usually a simplified procedure for solving a complex problem, also a full statement of a finite number of steps.'" *Typhoon Touch Techs., Inc.*, 659 F.3d at 1384-85 (citations omitted). "Precedent and practice permit a patentee to express that procedural algorithm "in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." *Id.* at 1385 (quoting *Finisar Corp.*, 523 F.3d at 1340).

a. "means for determining when an additional data field including location information has been added to said plurality of data fields"

Uniloc's Proposed Construction	Apple's Proposed Construction	Court's Recommended Construction
Structure: devices and algorithms described in 2:31-36, 2:42-43, 2:48-60; 3:36-41; 4:30-43; 5:18-36; 5:60-67; 6:11-14; 6:53-55; 7:46-55; 8:15-29; 9:34-46; FIG. 5	Function: determining when an additional data field including location information has been added to said plurality of data fields Structure: Not disclosed, indefinite	Function: determining when an additional data field including location information has been added to said plurality of data fields Structure: the DIAC of the Bluetooth protocol indicating the presence of an additional data field that contains location information, described at 2:48-60 and 7:46-54.

The parties agree that the claimed function is "determining when an additional data field including location information has been added to said plurality of data fields." They dispute whether the '207 patent discloses a corresponding structure for performing that function. At the

claim construction hearing, the parties confirmed their understanding that the focus of the particular function is not determining the presence of the type of data (such as location information) in the additional data field, but rather determining when the additional data field itself has been added to the inquiry message. Additionally, although the parties quibble about the meaning of "determining *when*" the additional data field is added, the claim language addresses, not the determination of a precise point in time, but rather the determination that something has occurred—i.e., an indication of the presence of an additional data field including location information.

Uniloc cites a host of passages from the specification that it contends disclose the structure(s) and algorithm(s) corresponding to the claimed function. But Uniloc provides no meaningful explanation for why that is so. *See* Dkt. No. 121 at 7-10; Dkt. No. 137 at 10-11. Having reviewed the specification, this Court finds that most of Uniloc's cited passages primarily concern other parts of the claimed invention, and are only tangentially related to the function of "determining when an additional data field including location information has been added to said plurality of data fields." For present purposes, the only two relevant passages cited by Uniloc are found in columns 2 and 7 of the '207 patent. The passage at column 2 provides, in relevant part:

> The beacon may be arranged to include an indication in one of said predetermined data fields (suitably in a currently unused or unassigned field), said indication denoting the presence of said additional data field, such that devices configured for reception of beacon data may be triggered to read from the additional data field.
>
> Where the first communications protocol comprises Bluetooth messaging, a special Dedicated Enquiry Access Code (DIAC) may be used to indicate the presence of location information in the additional data field.
>
> The presence of location information in the additional data field may be indicated by header information appearing in the additional data field.

'207 patent, 2:48-60. The relevant passage from column 7 provides:

> As mentioned above and shown in FIG. 5, the applicants propose that the inquiry messages issued by the base station have an extra field appended to them, capable of carrying a user-defined payload (CADATA). In the CA scenario, this payload is used to carry broadcast information, or keys, to CA terminals during the inquiry procedure. By adding the field to the end of the inquiry message, it

> will be appreciated that non-CA receivers can ignore it without modification. In addition, by using a CA-specific DIAC, CA receivers can be alerted to the presence of the extra information field.

Id. at 7:46-55. Uniloc's position is that the disclosed Dedicated Enquiry Access Code, or "DIAC," is something that a person of ordinary skill in the art would know and understand as specific structure corresponding to the claimed function. Apple contends that the cited text from column 2 simply provides an example of an indication to alert a receiver to the presence of *location information* in an additional data field, but does not disclose the claimed function of determining when the additional data field itself has been added to the plurality of data fields. As for the cited text from column 7, Apple acknowledges that the passage discusses alerting the CA receiver to the presence of the additional data field itself and discloses a "CA-specific DIAC" to "alert [CA receivers] to the presence of the extra information field." Dkt. No. 135 at 15. In its briefing, Apple argued that this disclosure does not provide an algorithm for determining when an additional data field has been added to the plurality of data fields. *See id*.

Preliminarily, the Court notes that neither side has offered expert evidence to support its respective position as to what a person of ordinary skill in the art would or would not understand from the written description. Having considered the parties' respective arguments, this Court finds that the patent specification clearly discloses a DIAC. Several places in the specification discuss DIAC in the Bluetooth protocol. *See* '207 patent, 6:60-66 ("To illustrate how this is implemented, we first consider how the Inquiry procedures themselves operate, with reference to FIGS. 3 and 4. When a Bluetooth unit wants to discover other Bluetooth devices, it enters a so-called inquiry substate. In this mode, it issues an inquiry message containing a General Inquiry Access Code (GIAC) or a number of optional Dedicated Inquiry Access Codes (DIAC)."); 7:32-36 ("A portable device that wants to be discovered by a beacon enters the inquiry scan substate. Here, it listens for a message containing the GIAC or DIAC's of interest. It, too, operates in a cyclic way. It listens on a single hop frequency for an inquiry scan period of T_inquiry_scan."); 10:35-39 ("In order to distinguish location information from other types of broadcast information (for example, other context aware mobile phone services or broadcast audio), two possible techniques include the following. The first is to use a special DIAC."). These portions of the

specification, when read together with the cited text from the '207 patent at 2:48-60 and 7:46-55, indicate that the claimed invention (1) uses a known and existing feature of the Bluetooth protocol (a known protocol), namely DIAC, to signal when the additional data field has been added and (2) teaches that a "CA-specific" DIAC may be used to alert CA receivers to the presence of an additional data field. The Court thus finds that, in this context, the reference to DIAC and "CA-specific DIAC" in the specification is a structure corresponding to the claimed function of "determining when an additional data field including location information has been added to said plurality of data fields." *See AllVoice Computing PLC v. Nuance Commc'ns, Inc.*, 504 F.3d 1236, 1242 (Fed. Cir. 2007) (concluding that the reference to the "dynamic data exchange ('DDE') protocol in the Windows operating system" in the patent specification is a structure corresponding to the claimed function).

Apple contends that *AllVoice* is distinguishable, arguing that the claimed invention in that case did not invoke something different from the standard Windows protocol. For the first time at the claim construction hearing, Apple argued that the specification—and in particular the last sentence appearing at 7:53-55, "In addition, by using a CA-specific DIAC, CA receivers can be alerted to the presence of the extra information field"—indicates that the standard Bluetooth protocol is being modified through the use of a "CA-specific" DIAC in order to allow the receiver to determine that an additional data field has been added. Apple further argued that the specification does not describe what "CA-specific" modification has been made to the DIAC, thus rendering the claim indefinite.

However, Apple has not provided the Court with any evidence compelling the conclusion that the patent specification necessarily refers to an unknown and insufficiently described modification to the normal Bluetooth protocol, or that a person of ordinary skill in the art would not understand from the specification that it describes a structure corresponding to the claimed function. *Typhoon Touch Techs., Inc.*, 659 F.3d at 1385. No one disputes that a DIAC is well known in the field. Moreover, nothing in the prosecution history suggests that the DIAC of the claimed invention is something other than what is known within the normal Bluetooth protocol. *See generally, e.g.* Dkt. No. 135-8 at ECF p. 14 (noting no dispute that "DIAC is old and well

known according to the Bluetooth specification."). Uniloc contends that it is not required to disclose details about how to write code for a DIAC or CA-specific DIAC. Indeed, "[f]or computer-implemented procedures, the computer code is not required to be included in the patent specification." *Id.* at 1385-86 (citation omitted). "A description of the function in words may disclose, at least to the satisfaction of one of ordinary skill in the art, enough of an algorithm to provide the necessary structure under § 112, ¶ 6." *Id.* at 1386.

Accordingly, this Court finds that the specification discloses "adequate defining structure to render the bounds of the claim understandable to one of ordinary skill in the art." *AllVoice Computing PLC*, 504 F.3d at 1245. Based on the foregoing, this Court recommends that the presiding judge find that the corresponding structure is "the DIAC of the Bluetooth protocol indicating the presence of an additional data field that contains location information, described at 2:48-60 and 7:46-54" and that claim 7 is not indefinite.

b. "means for reading the location information data from such an additional data field"

Uniloc's Proposed Construction	Apple's Proposed Construction	Court's Recommended Construction
Structure: devices and algorithms described in 2:61-3:10; 4:30-43, 4:57-67; 5:1-8, 18-36; 9:47-60; 10:12-16, 36-67; 11:27-50	Function: reading the location information data from the additional data field Structure: decoding stage 30 (4:57-58, Figure 1)	Function: reading the location information data from the additional data field Structure: decoding stage 30, described at 4:57-58, Figure 1

There is no dispute that the claimed function of this particular term is "means for reading the location information data from such an additional data field." Apple does not contend that the term is indefinite. Rather, the key disagreement is whether, as Apple contends, the corresponding structure for performing the claimed function is limited to decoding stage 30, which is described in Figure 1 and in the specification at 4:57-58 ("Messages received via the aerial 16 and transceiver 18 are passed via a decoding stage 30 to a filtering and signal processing stage 32."). Uniloc argues that the corresponding structure are devices and algorithms described in a number

of passages from the specification, including a filtering and processing stage also shown in Figure 1. *See* Dkt. No. 121 at 10-13; Dkt. No. 137 at 11-12.

As with the other means-plus-function term at issue, however, Uniloc did not sufficiently explain its position in its briefing. Having considered the parties' arguments and reviewed the specification, this Court finds that Apple has identified the relevant portion that is the structure for the claimed function. At the hearing, this Court explored whether the word "reading" in the claim language encompasses something broader than decoding. Apple maintains that the decoder referenced in the specification is the structure that is minimally necessary to perform the claimed function. *See, e.g., Micro Chem., Inc. v. Great Plains Chem. Co., Inc.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999) (stating that § 112(f) does not "permit incorporation of structure from the written description beyond that necessary to perform the claimed function."). When given an opportunity at the claim construction hearing to identify other portions of the specification that Uniloc believes disclose the structure for the claimed function, and to explain why, Uniloc chose to rest on the arguments presented in its briefing. As noted above, this Court finds Uniloc's briefing unpersuasive.

Accordingly, on this record, this Court recommends adoption of Apple's proposed construction for "means for reading the location information data from such an additional data field."

Dated: January 15, 2021

Virginia K. DeMarchi

VIRGINIA K. DEMARCHI
United States Magistrate Judge

United States District Court
Northern District of California